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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/090,468	03/04/2002	Craig A. Willkens	55567	5103

21874 7590 07/29/2003  
EDWARDS & ANGELL, LLP  
P.O. BOX 9169  
BOSTON, MA 02209

EXAMINER

JEFFERY, JOHN A

ART UNIT	PAPER NUMBER
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3742

DATE MAILED: 07/29/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/090,468

Applicant(s)

WILLKENS, CRAIG A.

Examiner

John A. Jeffery

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-24 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 March 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

### Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

### Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: .

## **DETAILED ACTION**

### ***Specification***

The disclosure is objected to because of the following informalities:

On Page 8, line 31, the numeral "12" must be changed to "16." Appropriate correction is required.

### ***Claim Objections***

Claims 9 and 10 are objected to because of the following informalities:

In both claims, the term "resistivance" must be changed to "resistivity" to more readily conform to standard terminology used in the art. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Axelson (US5705261) in view of Willkens et al (US5786565). Axelson (US5705261) discloses a ceramic igniter comprising a conductive zone 16, "power booster zone" 14 of higher resistivity, and "hot zone" 12 of highest resistivity. See col. 4, lines 37-55. The "power booster zone" 14 comprises about 50-70 v/o nitride ceramic and about 30-

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50 v/o  $\text{MoSi}_2$  and SiC in a 1:1 volume ratio. See col. 4, lines 44-46. In view of this composition, the booster zone 14 would inherently have a PTCR. If this inherency is disputed, then Applicant is referred to Willkens et al (US5786565) where, in col. 4, lines 1-17, the hot zone of the igniter is described as having a PTCR which has a composition of (1) between 50-75 v/o of a nitride ceramic, (2) 10-45 v/o SiC, and (3) between 8.5-15 v/o  $\text{MoSi}_2$ . In view of the similarity of composition between the zone having a PTCR in Willkens et al (US5786565) with the "power booster zone" 14 of Axelson (US5705261), the PTCR characteristics would not only be inherent to the zone 14 of Axelson (US5705261), but also would have been obvious to one of ordinary skill in the art. Moreover, in view of their diverse resistivities, each zone would inherently differ in operational temperature during use. The claims differ from the previously cited prior art in calling for the hot zone path length to be 2 cm or less. However, Willkens teaches forming the hot zone such that it is less than 0.5 cm. See abstract. By providing hot zones of relatively short length, isolated temperature gradients are avoided that can cause premature failure. In view of Willkens, it would have been obvious to one of ordinary skill in the art to provide a short hot zone length (i.e., 2 cm or less) for the hot zone in the igniter of Axelson so that isolated temperature gradients are avoided that could cause premature failure.

The claims also differ from Axelson in calling for a central heat sink zone. Providing a central heat sink disposed between the conductive, booster, and hot zones of an igniter is conventional and well known in the art as evidenced by Willkens noting heat sink 19 which ensures that the igniter has high resistance to convective cooling

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and a low inrush current. Willkens, col. 3, lines 20-29 and Fig. 2. In view of Willkens, it would have been obvious to one of ordinary skill in the art to dispose a heat sink between the conductive, booster, and hot zones of the previously described igniter in order to ensure that the igniter has high resistance to convective cooling and a low inrush current. Regarding claims 14 and 16, note col. 7, lines 56-58 of Willkens in which a temperature of 1100 - 1350 °C is reached in one second from a nominal 24V source.

Regarding claims 9-11, it is well settled that where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation. *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233,235 (CCPA 1955). Because the relative room and operating temperature resistivities of the conductor zone 16, booster zone 14, and hot zone 12 of Axelson meet the general conditions of the claims, the claimed relative ranges of (1) conductor-to-booster zone resistitvance [sic], and (2) booster-to-hot zone resistivity merely set forth the optimum ranges of such resistivity readily discoverable by routine experimentation by skilled artisans. Accordingly, the recited ranges are not patentable over the cited prior art. Similarly, although Axelson does not expressly state the length of booster zone 14, the claimed booster zone path length in claims 20 and 21 merely sets forth the optimum ranges of path length to achieve a desired resistivity; such optimum lengths to achieve a desired resistivity are readily discoverable by routine experimentation by skilled artisans. Accordingly, the recited path length ranges are not patentable over the cited prior art which discloses the general conditions of the claims.

With regard to sintering the ceramic, Axelson (US5705261) in col. 5, lines 45-49 discloses that the ceramic igniter was prepared "in accordance with the teachings of the Washburn patent [i.e., US5045237]" which discloses a sintering process.

### ***Response to Arguments***

Applicant's arguments filed 5/15/03 have been considered but are deemed to be moot in view of the new grounds of rejection. However, the examiner respectfully wishes to traverse Applicant's suggestion regarding the Axelson patent. On Page 4 of the Remarks, Applicant argues that Axelson "preferably omit[s]" the booster portion 14 pointing to col. 5, lines 50-55 and the examples. The clear import of Applicant's suggestion is that because providing a booster zone is not a preferred embodiment, it cannot be relied on by the examiner to teach or suggest providing such a zone.

However, merely because a disclosed embodiment in a prior art reference is not preferred by the inventor does not foreclose its status as prior art for all that it teaches. It is well settled that a reference may be relied upon for all that it would have reasonably suggested to one having ordinary skill the art, including nonpreferred embodiments. *Merck & Co. v. Biocraft Laboratories*, 874 F.2d 804, 10 USPQ2d 1843 (Fed. Cir.), cert. denied, 493 U.S. 975 (1989). See also *Celeritas Technologies Ltd. v. Rockwell International Corp.*, 150 F.3d 1354, 1361, 47 USPQ2d 1516, 1522-23 (Fed. Cir. 1998). Here, despite not being preferred in some embodiments, a cursory inspection of Fig. 1 would nevertheless immediately reveal the existence of a booster zone 14 to the skilled artisan.

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### ***Final Rejection***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

### ***Conclusion***

Any inquiry concerning this or earlier communications from the examiner should be directed to John A. Jeffery at telephone number (703) 306-4601 or fax (703) 305-3463. The examiner can normally be reached on Monday-Thursday from 7:00 AM to 4:30 PM EST. The examiner can also be reached on alternate Fridays.

The fax phone numbers for the organization where this application or proceeding is assigned are:  
Before Final (703) 872-9302

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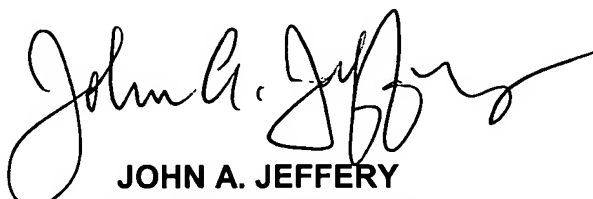
After Final

(703) 872-9303

Customer Service

(703) 872-9301

Any inquiry of a general nature or relating to the status of this application should be directed to the Technology Center receptionist whose telephone number is (703) 308-0861.



**JOHN A. JEFFERY**  
**PRIMARY EXAMINER**

7/21/03